

**GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA**

UNSTARRED QUESTION NO:3864

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Thorium Based Reactors

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Will the Minister of ATOMIC ENERGY be pleased to state:

(a)whether development of thorium based nuclear power plants/atomic reactors has been envisioned to meet the growing demand of energy in the country and if so, the details thereof;

(b)whether Research and Development of the thorium based nuclear power plants is totally indigenous with little support from the foreign countries and if so, the details thereof;

(c)whether nuclear energy/power is one of the cleanest forms of large scale generation of electricity and if so, the details thereof; and

(d)the status of the 300 MWe Advanced Heavy Water Reactor (AHWR) being developed by the Bhabha Atomic Research Centre and the time by which it is likely to be commissioned?

Answer

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH) :

(a)For the large growing population of our country, it is important to have a vision of energy independence, implying the necessity for meeting the energy demands using indigenous resources to the maximum extent. With this perspective, utilisation of very large resources of Thorium available in the country has been envisioned as an important element of the Indian nuclear power programme.

On account of non-existence of any fissile isotope in naturally occurring Thorium (unlike that existing in Uranium), commercial utilisation of Thorium, on a significant scale, can begin only when abundant supply of either Uranium or Plutonium resources are available. Upon the launch, followed by a significant growth of a thorium based nuclear programme in this manner, it could be possible to maintain the achieved level (without much further growth) of nuclear power programme with thorium alone, without additional demands on uranium or plutonium resources. Therefore, considering the meager domestic uranium resources in the country, it is feasible to start a significant commercial level Thorium based reactor programme in our country only after an adequate inventory of Plutonium becomes available from our Fast Breeder Reactors, comprising the second stage of Indian nuclear power programme. Accordingly, the utilisation of Thorium, as a practically inexhaustible energy source, has been contemplated during the third stage of the Indian nuclear programme, which can be reached after a few decades.

(b)At present, the interest of the foreign countries in Thorium based nuclear power is generally limited to utilisation of Thorium for disposal of Plutonium obtained after reprocessing of spent fuel from current generation nuclear power plants. From this perspective, the Indian vision of speedily maximising the potential of plutonium received from spent nuclear fuel through FBRs, followed by Thorium based energy systems, is different with respect to some ongoing initiatives that are seen in some parts of the world. Currently, India is one of the leading countries with well-advanced thorium utilisation technologies, developed indigenously.

(c)On account of no emission of green house gases in the generation of electricity using nuclear power, nuclear power is one of the cleanest forms of large scale electricity generation. Thorium based power generation also would, therefore, qualify for treatment as a clean source of energy.

(d)The 300 Mwe Advanced Heavy Water Reactor (AHWR) being developed by the Bhabha Atomic Research Centre will serve as a technology demonstrator for the Thorium fuel cycle technologies. This reactor has been included in the XII Five Year Plan for initiation of activities towards its construction. The reactor, being the first of its kind is likely to take about ten years for completion of its construction.
